

Socioeconomic Distribution of Cervical Cancer in Relation to Early Marriage and Pregnancy

This study was undertaken to relate the etiology of cervical cancer to socioeconomic status and age at first marriage and first pregnancy. Early marriage had been repeatedly associated with cervical cancer, and the incidence was known to be higher in the lower socioeconomic areas of most cities. It was conceivable that early marriage or a related factor might be of etiologic importance and indirectly account for the association between socioeconomic status and cervical cancer.

The data used are from the vaginal cytologic survey of Memphis and Shelby County, Tenn. In this survey, which was carried out by the University of Tennessee and the National Cancer Institute between July 1952 and June 1957, a total of 68 percent of the white and 57 percent of the nonwhite female resident population had been examined. Cases detected in the first screening are compared with a random 2.8 percent systematic sample of women who participated in the survey but who did not have evidence of uterine cancer. The groups of women considered are those with histologically confirmed cases of intraepithelial carcinoma and invasive squamous cell carcinoma of the cervix and women whose cytologic findings were suspicious or positive with regard to malignancy (Papanicolaou classes III through V), including those who either did not have biopsies or whose tissue studies failed to confirm the diagnoses within 18 months.

This study is based on the history recorded when the initial cytologic specimen was collected. The women also are classified according to the socioeconomic status of the census tract in which they lived. The data indicate that, in general, all socioeconomic areas had good representation in the cytologic survey. There was, however, slight over-representation

of the upper socioeconomic area for all ages over 25.

A number of possible selective factors were evaluated including completeness of history, inclusion of symptomatic cases, failure to obtain adequate tissue studies for some cases, and clinical stage of disease (since prevalence data were used).

These are the major findings of the study: For white women, age at first pregnancy, age at first marriage, and socioeconomic area of res-

Public Health Monograph No. 73

Socioeconomic Distribution of Cervical Cancer in Relation to Early Marriage and Pregnancy.
By Frank E. Lundin, Jr., Cyrus C. Erickson, and Douglas H. Sprunt. Public Health Monograph No. 73 (PHS Publication No. 1209), 41 pages. U.S. Government Printing Office, Washington, D.C., 1965, price \$0.30.

The accompanying article summarizes the contents of Public Health Monograph No. 73. Dr. Lundin is head of the Special Cancer Studies Section, Epidemiology Branch, National Cancer Institute, Public Health Service, Bethesda, Md. Dr. Erickson and Dr. Sprunt are in the Division of Pathology and Microbiology, University of Tennessee, Memphis.

Readers wishing to read the data in full may purchase copies from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

Official agencies and others directly concerned may obtain single copies from the Public Inquiries Branch, Office of Information and Publications, Public Health Service, Washington, D.C., 20201. Copies also will be found in libraries of professional schools and major universities and in selected libraries.

idence are definitely associated with histologically confirmed cases of invasive and intraepithelial carcinoma of the cervix as well as with unconfirmed cases having suspicious and positive cytologic findings. Early pregnancy and a lower socioeconomic area of residence are independently associated with each of these categories of cancer.

For nonwhite women, age at first marriage was not associated with intraepithelial or invasive cervical cancer. Those reporting early pregnancy had more invasive cervical cancer as well as unconfirmed cases with suspicious or positive cytologic findings.

Age at first pregnancy and marriage were highly correlated. The number of pregnancies were not independently related to cancer. The data are consistent with the view that age at first pregnancy alone or in conjunction with early marriage is a determinant of cervical cancer. It is possible that some unidentified factor or factors linked with the two are of greater importance.

Data are also presented for women who never married or who married but were never pregnant, for age at last pregnancy, for religion, and for the sensitivity and specificity of vaginal cytologic screening.

Advisory Committee on X-rays

An expert advisory committee on X-rays in the health professions has been appointed to help the Public Health Service Division of Radiological Health promote more effective use of X-rays so that the United States population will receive constantly increasing health benefit per unit of X-ray exposure given.

Dr. Richard H. Chamberlain, professor of radiology, chairman, department of radiology, University of Pennsylvania, Philadelphia, has been named chairman of the committee. Members are Prof. Hanson Blatz, director, office of radiation control, City of New York Department of Health; Carl B. Braestrup, director, physics services, City of New York Department of Hospitals; Dr. Armand E. Brodeur, as-

sociate professor of radiology, St. Louis University School of Medicine; Dr. Reynold F. Brown, department of radiology, University of California Hospital, San Francisco; Robert O. Gorson, associate professor, department of radiology, Jefferson Medical College Hospital, Philadelphia; Dr. John M. Heslep, chief, bureau of radiological health, California State Department of Public Health, Berkeley; Dr. John S. Laughlin, head, department of medical physics, Memorial Center, New York; Dr. E. Dale Trout, professor of radiological physics, Radiation Center, Oregon State University, Corvallis; and Dr. Harold O. Wyckoff, chief, X-ray Standards Section, National Bureau of Standards, Washington, D.C.



Radiochemical Determination of Uranium in Environmental Media by Electrodeposition. *PHS Publication No. 999-RH-11; 1964; by Harry Levine and Anthony Lammanna; 20 pages.* Presents a method for isolating uranium from samples and electrodepositing the element on a nickel-plated copper disc. Electroplating efficiency is about 85 to 95 percent. The electroplating procedure described is simple and relatively inexpensive. The method is applicable to biological materials as well as to environmental media.

Radioactive Decay Correction Factors. *PHS Publication No. 999-RH-12; 1965; 200 pages.* Presents a computer printout in tabular form of decay correction factors for about 150 radionuclides which are commonly measured in environmental surveillance, or used as standards or tracers. These tables facilitate the task of calculating the activity of a radionuclide at a given time, with respect to its activity at any other time. Also presents, as an additional aid, tables giving the fractional ingrowth of yttrium 90 into strontium 90 and of radon 22 into radium 226.

Occupational Diseases. A guide to their recognition. *PHS Publication No. 1097; 1964; 375 pages; \$2.25.* Serves as a reference book to physicians, consultants, industrial hygienists, and allied professional personnel in the detection and control of job-related diseases. Covers chemical, physical, and biological categories of occupational hazards. Lists special diagnostic tests and recommended threshold limits under chemical hazards and occupations associated with potentially harmful environmental agents. Explores basic information on the mode of entry of various hazards and their effects in the body. Includes separate sections on skin irritants and

sensitizers, pneumoconiosis, and pesticides; also plastics and synthetic resins and plant and wood hazards. Concludes with a listing of sources of consultation on occupational health and industrial hygiene problems and a basic reference list.

Reprieve. The five who survived. A filmed interview with five Americans who tell about their recovery from a heart attack. *PHS Publication No. 1285; 1965; leaflet.* Brochure describes the Public Health Service documentary film. Gives name and producer, participants, running time of film, and shooting location. Tells how and where to obtain film on loan for group showing. Contains brief dialog abstracts by the film's commentator and the introducer.

Cancer of the Stomach. *PHS Publication No. 1237; 1965; 8 pages; 5 cents, \$3.25 per 100.* Discusses incidence of stomach cancer, its symptoms, diagnosis, and treatment, and current research into the disease. Explains that most U.S. physicians believe that danger of stomach ulcers is not so much that ulcers may lead to cancer, but that they may mask stomach cancer and delay proper treatment. In cases of what appears to be stomach ulcers, repeated X-ray examinations should accompany the ulcer treatment to make sure that a malignant tumor is not present and growing.

Amblyopia ex Anopsia Robs Children's Eyesight. *PHS Publication No. 1288; 1965; 4 pages; 5 cents.* Defines amblyopia ex anopsia and estimates the extent of the problem in the United States today. Discusses the symptoms of the disorder and describes established treatments. Urges parents to be aware of the need for proper screening of children in infancy and early child-

hood for the early detection of vision defects contributing to the condition so that preventive treatment can be effective. Outlines briefly the observable signs of eye trouble that parents can look for as early warnings indicating the child's need for eye examinations and treatment.

Regulations for Grants for Constructing Facilities for the Mentally Retarded (General). *PHS Publication No. 1181-A-1; April 1965; 9 pages; 10 cents.* Lists regulations governing Title I, Part C of the Mental Retardation Facilities and Community Mental Health Centers Act of 1963 (P.L. 88-164). This section of the legislation makes funds available to States to assist in the construction of facilities for the mentally retarded in accordance with approved State plans.

Genetic Aspects of Chronic Diseases. *PHS Publication No. 1163; 1964; 395 pages; \$1.50.* Presents papers of the Symposium on Contributions of Genetics to Epidemiologic Studies of Chronic Diseases held June 17-19, 1963, at Ann Arbor, Mich. Discusses the role and limitations of the genetic approach in studies concerned with the epidemiology of a variety of chronic diseases. Material is organized under five headings: basic genetic and epidemiologic principles, critical reviews of selected, illustrative problems, problems in experimental design, papers describing current genetic-epidemiologic studies, and genetic counseling.

This section carries announcements of new publications prepared by the Public Health Service and of selected publications prepared with Federal support.

Unless otherwise indicated, publications for which prices are quoted are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington D.C., 20402. Orders should be accompanied by cash, check, or money order and should fully indentify the publication. Public Health Service publications which do not carry price quotations, as well as single sample copies of those for which prices are shown, can be obtained without charge from the Public Inquiries Branch, Public Health Service, Washington, D.C., 20201.

The Public Health Service does not supply publications other than its own.

BALL, JOHN C. (Public Health Service), and **COTTRELL, EMILY S.:** *Admissions of narcotic drug addicts to Public Health Service hospitals, 1935-63. Public Health Reports, Vol. 80, June 1965, pp. 471-475.*

From 1935 through 1963 there were 84,625 addict admissions to the Public Health Service Hospitals at Lexington, Ky., and Fort Worth, Tex. The number of addict admissions reached a peak of 4,533 in 1950. Since that year, there has been a general decline in the yearly number of admissions; there were 3,111

addict admissions during 1963.

When addict patients admitted in 1937 were compared with those admitted in 1963, the 1963 hospital population was found to be younger, to come more frequently from the largest metropolitan areas, and was more likely to be non-white than addicts admitted in 1937.

WEAVER, LEO (Public Health Service), **GUNNERSON, CHARLES G., BREIDENBACH, ANDREW W.,** and **LICHTENBERG, JAMES J.:** *Chlorinated hydrocarbon pesticides in major U.S. river basins. A synoptic view. Public Health Reports, Vol. 80, June 1965, pp. 481-493.*

Extensive surveillance for chlorinated hydrocarbons and other synthetic organic pollutants has been underway by the Public Health Service for several years. Recent development of analytical procedures capable of measuring pesticides in the parts-per-trillion range on grab samples made it desirable to conduct a special synoptic survey of pesticide pollution in the various U.S. river systems during September 1964.

In order of frequency of occurrence, dieldrin, endrin, DDT, and DDE were found in all major river basins. Heptachlor and aldrin were less abundant. DDD was detected at only one sampling station; presumptive evidence of benzene hexachloride was observed at only one

station; and no indication of heptachlor epoxide was seen at any station. These latter results may have been due to the lower sensitivity of the procedure for these three compounds. Generally, both the occurrences and concentrations found in grab samples from the synoptic survey were in accord with the results of previous analyses of samples obtained by the carbon adsorption method.

A reference library of stored extracts from more than 5,000 samples collected at 108 pollution surveillance stations since 1958 is being reexamined, as time permits, to develop data on rates at which pesticide levels in the Nation's surface waters have changed.

HADDON, WILLIAM, JR. (New York State Department of Health), and **MORGAN, RUSSELL H.:** *Frequency of medical X-ray examinations in Monroe County, New York. Public Health Reports, Vol. 80, June 1965, pp. 515-525.*

The doses of ionizing radiation received by the population from medical X-ray sources are determined by the numbers and types of examinations performed and by certain dosimetric relationships associated with the techniques employed in each examination type. In Monroe County, N.Y., a survey was undertaken to determine the per capita rates with which the various medical radiological examinations were performed in a large, predominantly urban population with a high level of medical care.

Age, sex, and type-specific rates are given for 20 categories of diagnostic examinations. Rates in general increased with age, but the patterns of increase

varied considerably by age, sex, and type of examination. Many skeletal and other examinations varied seasonally, in some cases apparently as the result of variations in weather and in athletic activities.

In a subsample of those examined, the percentage of women pregnant was similar to that estimated for the general population. Also, the 3-year survival rates of examinees less than 35 years of age were essentially the same as those of the general population.

In addition to the use of X-ray examination rates in assessing population doses of ionizing radiation, the study of such rates is useful to epidemiologists in a variety of ways.

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RODMAN, ANNE CLARK (Maryland State Department of Health): *Comparison of Baltimore's utilization rates under two physician-payment systems. Public Health Reports, Vol. 80, June 1965, pp. 476-480.*

Comparison of physician and hospital-clinic utilization rates in Baltimore, Md., before and after instituting a fee-for-service system of payment to the physicians shows that in 1963 physician utilization increased about 20 percent, clinic utilization decreased 5 percent, and total utilization increased about 9 percent, with the physician providing a slightly higher proportion of all visits.

Since probably only a part of the increase in the physician utilization rate

resulted from a change in the illness pattern in Baltimore City from 1962 to 1963, it appears that an actual increase of about 10 percent in visits by physicians occurred within the first year after the new system of payment was introduced in 1963. In addition, some patients transferred from hospital clinic to physician services. Preliminary data for 1964 indicate that the rise in physician utilization is becoming more marked in the second year.

FREDRICKSON, LUTHER E. (Tennessee Department of Public Health), and **THOMAS, LUTTRELL**: *Relationship of fox rabies to caves. Public Health Reports, Vol. 80, June 1965, pp. 495-500.*

Until recent years rabies was observed primarily among dogs throughout Tennessee. Vaccination programs have reduced the incidence of canine rabies, and the fox has emerged as the problem species. Fox rabies, however, has been restricted to middle and east Tennessee. This confinement of the disease has been puzzling because foxes are located throughout the State.

Thirteen species of bats have been identified in Tennessee, and reports of rabid bats have been confirmed from all

sections of the State. Previous investigators have noted that rabid bats can transmit the virus without biting, under certain cave conditions. Epidemiologic evidence presented in this report suggests that bats may infect foxes in caves in certain areas of Tennessee.

Although the data presented do not prove conclusively that these caves permit rabid bats to infect the local fox population, they do suggest a positive relationship between the number of caves and the number of rabid foxes.

CALL, R. A. (Utah Valley Hospital, Provo, Utah), **GREENWOOD, D. A.**, **LeCHEMINANT, W. H.**, **SHUPE, J. L.**, **NIELSEN, H. M.**, **OLSON, L. E.**, **LAMBORN, R. E.**, **MANGELSON, F. L.**, and **DAVIS, R. V.**: *Histological and chemical studies in man on effect of fluoride, Public Health Reports, Vol. 80, June 1965, pp. 529-538.*

The presence of elevated concentrations of fluorides in the atmosphere has been associated with changes in certain plants and an increase in the fluoride content of forage in certain areas in Utah. Long-term ingestion of such forage by some animals has produced changes characteristic of fluorosis in some of them. It seemed important to determine if man was also being adversely affected. In this investigation, 127 human bodies were autopsied and studied for gross, histological, and chemical evidence of fluoride intoxication. Eighty-eight of these deceased persons came from geographic areas known to have had elevated fluoride levels in the atmosphere and forage. Analyses for fluoride, calcium, phosphorus, and ash were made on the calvarium, sternum, rib, iliac crest, and lumbar vertebrae. Determinations for fluoride and dry matter were made on the brain, heart, lungs,

thyroid, aorta, liver, spleen, pancreas, and kidney.

The highest fluoride levels were observed in older adults showing the end-stage kidney of bilateral pyelonephritis and polycystic disease. Average levels were found in subjects with unilateral pyelonephritis and in subjects with pyelonephritis with only slight to moderate disease. The highest fluoride levels found, in subjects with the most severe kidney disease, were within the normal range, and no disease associated with fluorides was evident. Because the number of cases of chronic renal disease in this series was limited, further studies seem advisable.

Data accumulated in this study indicate that the levels of fluorides to which Utah residents in the areas studied had been exposed were not responsible for gross or histological changes in soft tissues or bones.